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mcmurdo

EMERGENCY LOCATION BEACONS

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Ref: McM Waiver 01

FILED/ACCE

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FEB 6-1968

Federal Communications Commission
Office of the Secretary

Request for Petition waiver for McMurdo

Dear Sir/Madam

From January 1st 2010, after several years of product development and standardization work through international organizations, the AIS-SART will be adopted into the GMDSS requirements as an alternative Search and Rescue Locating Device to the 9GHz Radar SART.

McMurdo are currently developing an AIS SART to meet the new requirements and are on target to complete the Type Approval testing by December 2009. The current FCC SART regulations 47 CFR 80.1101(c)(6)) do not permit the use of an AIS SART.

McMurdo wish to apply for a petition waiver based on compliance with the IMO standards (A.694(17), MSC.246(83)) and IEC 61097-14; to achieve authorization from the FCC to place this product onto market in the USA; from January 2010 onwards.



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Engineering Manager
1-10-2009

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**Request for Petition waiver for the McMurdo Ltd product -
Smartfind S5 AIS SART (FCC ID - KLS-S5)**

Dear Sir/Madam

From January 1st 2010, after several years of product development and standardization work through international organizations, the AIS-SART will be adopted into the GMDSS requirements as an alternative Search and Rescue Locating Device to the 9GHz Radar SART.

The current FCC regulations 47 CFR 80.1101(c)(6)) only permit the use of 9GHz (X-band) SART and do not permit the use of an AIS SART (VHF band).

McMurdo wish to apply for a petition waiver against the following standards called up in FCC 47 CFR 80.1101(c)(6)(i) & (ii)), these are IMO standard A.802(19) 'Performance Standards for Survival Craft Radar Transponders for use in Search and Rescue Operations' and ITU recommendation M.628-3 Technical Characteristics for Search and Rescue Radar Transponders.

IMO resolution MSC.246, Adoption of Performance Standards for Survival Craft AIS Search and Rescue Transmitters (AIS-SART) for use in search and rescue operations; adopts the AIS SART as an alternative to the Radar SART (9GHz, X-band).

McMurdo Ltd have developed the Smartfind S5 AIS SART to meet the new GMDSS requirements and are on target to complete the Type Approval testing to IEC 61097-14 by December 2009. The Type Approval testing also encompasses the relevant parts of FCC CFR 47 Parts 2, 15 & 80.

The unique and innovative feature of the AIS-SART is its technical capability, which is based on the following principle:-

The unit will be programmed from the manufacturer with a unique ID code and will receive its position via an internal GPS module; this data is combined and transmitted using the international AIS channels (AIS 1 – 161.975MHz and AIS 2 – 162.025MHz) in the maritime VHF band.

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VAT NO GB 980 2079 17

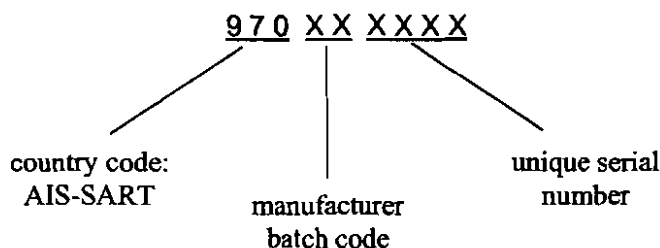
The logo for McMurdo, featuring the company name in a bold, stylized font.

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The transmitter sends out a specified pattern. Every minute, a sequence of eight messages is transmitted; each message is transmitted in a 26ms time slot. Four messages are transmitted on AIS 1 and four on AIS 2. All eight messages are transmitted within a total time frame of 14 seconds. This time frame is defined to maximise the probability that one of the transmissions will coincide with the AIS SART being at the top of a wave, so enhancing the probability of reception. It is only necessary to receive one of the eight messages from time to time to accurately locate the AIS-SART.

Any vessel or station which can receive and detect an AIS signal will also detect an AIS-SART. The information transmitted by the AIS-SART provides identification and location. Identification consists of an MMSI ID code, where the first three digits will be "970". The ID code consists of a total of 9 digits and the AIS-SART uses the remaining 6 digits to indicate a manufacturer code (2 digits) in addition to the unit's unique serial number (4 digits).



The ID code that appears on the AIS receiver and connected equipment will also be visualized on a ship's electronic chart, onboard ships with modern integrated installations. An AIS-SART will be shown as a circle with a built-in cross.

During development of specification IEC 61097-14 range performance trials were undertaken. The range tests were performed from both helicopters and ships, with ranges obtained from 40 Nm up to 132 Nm, with the AIS-SART mounted on a 1m pole. The AIS-SART has a much superior performance compared with other locating transmitters (EPIRB, PLB 121.5MHz

McMurdo Ltd.

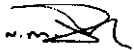
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homer or 9GHz radar SART) and can be located at a far greater distance, with GPS precision, using standard equipment (AIS) that automatically positions the persons in distress on an electronic chart. There is no doubt that the AIS-SART will contribute to more effective and less time consuming search and rescue operations in the future, with the result that more people in distress will be saved.

A handwritten signature in black ink, appearing to read 'Neil Jordan'.

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29-11-2009

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**S5
AIS SART
User Manual**

Safety notices



WARNING: An AIS SART is an emergency radio beacon.
Use only in situations of imminent danger to life.



CAUTION: False alerts endanger lives and cause disruption to Search and Rescue services, deliberate misuse of the AIS SART could result in penalty.



CAUTION: If the anti-tamper tab is broken, the SART is not compliant with SOLAS regulations and must be repaired or replaced.



CAUTION: Do not dismantle the AIS SART, it contains no user-serviceable parts.



CAUTION: Contains lithium batteries. Do not incinerate, puncture, deform, short-circuit or recharge.



CAUTION: Dispose of a used AIS SART in accordance with local waste disposal regulations. Refer to End of Life Statement.



CAUTION: Avoid using chemical solvents to clean the AIS SART as some solvents can damage the case material.



CAUTION: An AIS SART is a radio transmitter. Some administrations may require that the user holds a valid radio licence to cover its ownership and use.

Radio Frequency Exposure Warning



WARNING: The AIS SART emits low levels of radio frequency radiation; avoid handling the upper section antenna zone when activated.

Ownership details

Vessel Name:

Owner details:

Unique ID;

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Disclaimer

The information and illustrations contained in this publication are to the best of our knowledge correct at the time of going to print. We reserve the right to change specifications, equipment, installation and maintenance instructions without notice as part of our policy of continuous product development and improvement. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, electronic or otherwise without permission in writing from McMurdo Limited. No liability can be accepted for any inaccuracies or omissions in the publication, although every care has been taken to make it as complete and accurate as possible.

IN EMERGENCY

Remove the AIS SART from its stowage bag and assemble the main unit onto the mounting pole

**Break off the anti-tamper tab.
Push the ON Button**

Erect the mounting pole and deploy the AIS SART in an elevated position.

The AIS SART is a locating radio beacon for use only in emergency situations. False alerts endanger lives; help prevent them by understanding how to look after and correctly operate the AIS SART.

Introduction

Thank you for purchasing the S5 AIS SART 'search and rescue locating device'. The AIS SART is designed to assist in survivor craft location during search and rescue operations.

The AIS SART is primarily intended for fitment by SOLAS vessels under carriage requirement rules. SOLAS fitting rules differ depending on type and size of vessel and survival craft. In general, at least one search and rescue locating device is carried on each side of every passenger and cargo ship over 500 gross tons. Smaller SOLAS classified vessels are required to carry at least one search and rescue locating device.

The AIS-SART should be stowed on board in a location where it can be rapidly placed in any survival craft.

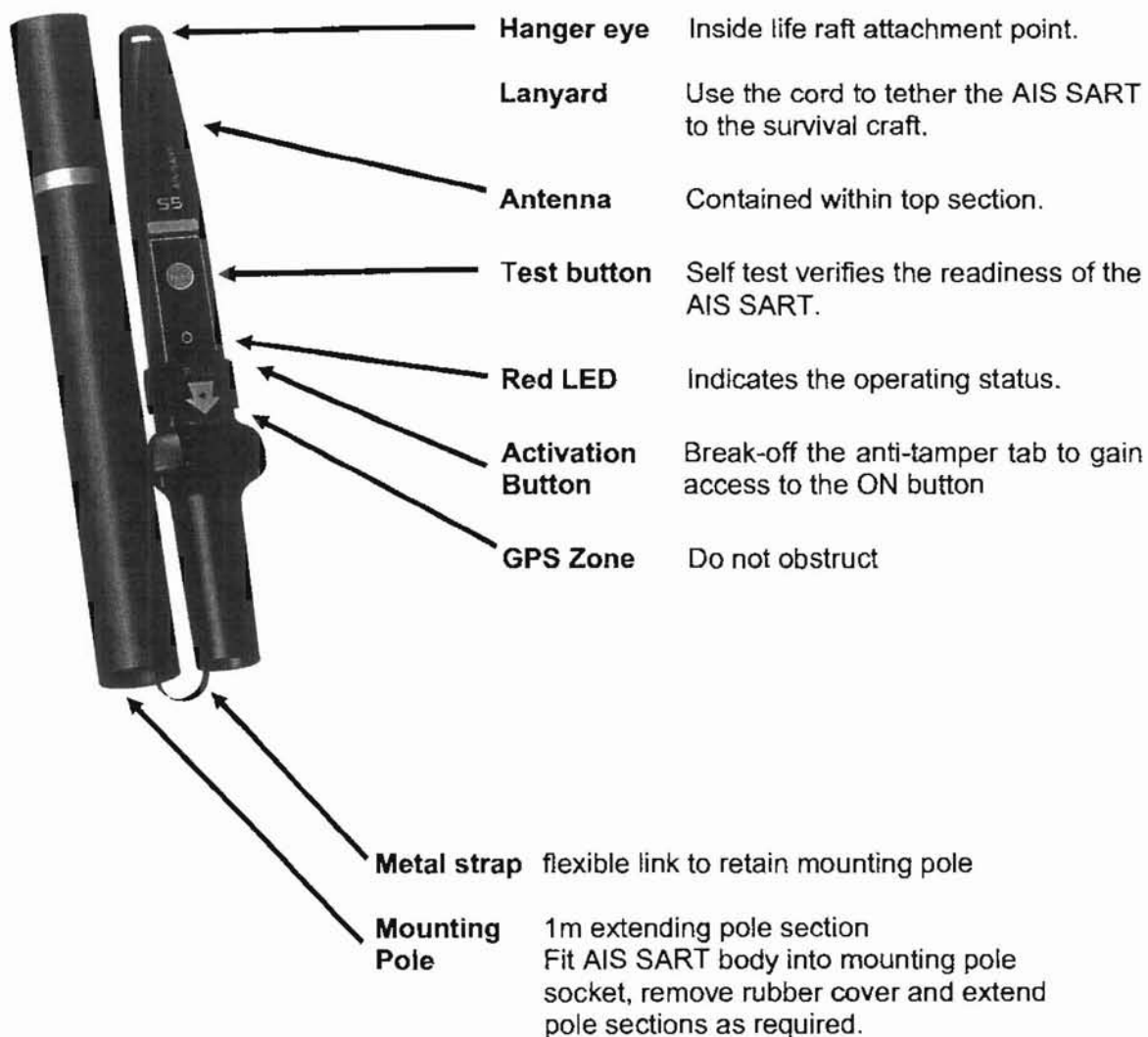
Product registration

Each AIS SART carries a unique serial number printed on the label on the orange body. It is recommended that a record of the AIS SART unique identifier number should be kept by the vessels management organisation.

Overview

An AIS SART is intended to be a one-shot device, once activated it will transmit emergency alerts for at least 96 hours.

The key components of the AIS SART:





AIS SART pictured left is ready for deployment with the mounting pole fully extended.

The activated AIS SART should be positioned upright and with a clear view of the sky.
Do not obstruct the GPS zone marked on the side.

The AIS SART should be arranged to be manually erected when the liferaft is deployed.

The antenna datum marked on the pole section should be positioned more than one metre above sea level when the AIS SART is deployed.



TEST button Self test verifies the readiness of the AIS SART
Second function
Press and hold the **TEST** button to turn the unit **OFF**

Red LED Indicates the operating status.

ON button To activate the AIS SART
Press the **ON** button until the Red LED starts to flash.

To switch off
press & hold
"TEST"

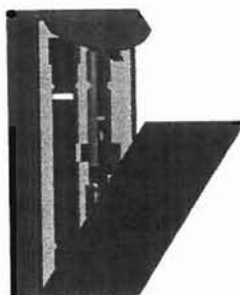
Deployment procedure

- Lift stowage bag off its wall mounting (1)
- Carry to life-raft using the strap provided
- Open bag and remove the SART(2)
- Fold the pole down and insert the SART into the top of the pole(3)
- Remove the rubber end cover from the pole and release pole sections(4)
- Twist the sections to lock them in fully extended position(5)

1



2



3



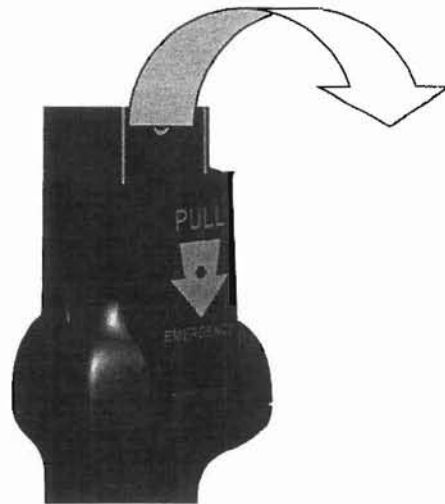
4



5



Activation procedure



Break off the anti tamper tab to gain access to the 'ON' button beneath.

1. Break off the protective anti-tamper tab.

2. Press the 'ON' button



3. The Red LED indicator light will start to flash every few seconds



Red LED indication (AIS SART ON)



1 flash every 3.5 seconds

The first AIS transmission is made after 50 seconds. This short delay allows time to switch the AIS SART off, if activated in error.

4. GPS position fix indication



A good GPS position fix is indicated by the **Red LED** signalling a long flash every minute.

Deactivation of the AIS SART

Should the AIS SART be activated by mistake or if the emergency ends then the AIS SART can be switched OFF by depressing the **TEST** button for 2 seconds, the **Red LED** will go out.



Important

After activation the AIS SART requires replacement of the anti-tamper tab and will need a new battery. Refer to service section for further details.

Deployment guidelines

The AIS SART will work best when the top section has an unobstructed view of the sky. If it is not possible to pick a location with a totally unobstructed view of the sky, do your best to maximise the sky view. The antenna datum marked on the pole section should be positioned more than one metre above sea level when the AIS SART is deployed.

Tie the securing lanyard to the survival craft to avoid loss of the AIS SART, activate and deploy the AIS SART.

Mounting outside a canopy life raft.

Fully extend the telescopic mounting pole:

Remove the rubber cover from the bottom of the mounting pole; allow the pole sections to drop. Lock each section together by twisting each section.

Release the lanyard spool and tether the free end of the lanyard to a securer fixing point within the survival craft.

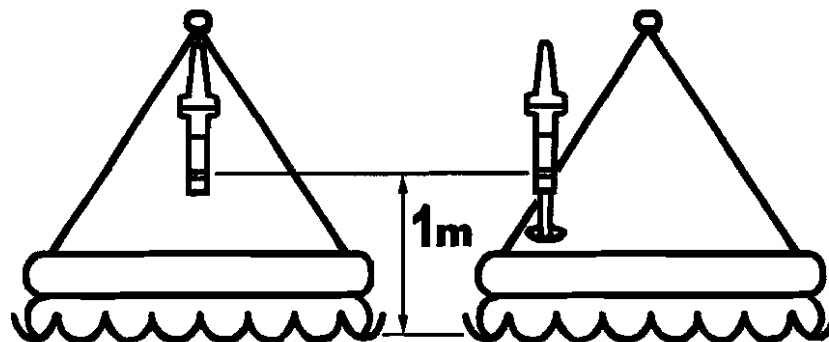
Insert the AIS SART through the SART deployment port in the survival craft canopy. Position the bottom of the support pole within the locating pocket. Secure the pole to the canopy support.

Depending on the type of survival craft, the mounting pole can also be located on the outboard side of the survival craft at the doorway entrance on the boarding ramp side. The AIS SART is mounted in the same way except the pole is secured to the buoyancy support.

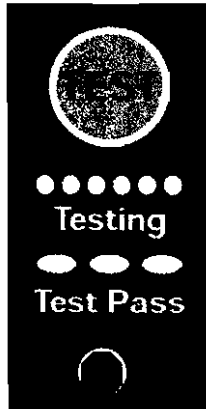
Mounting inside a canopy life raft.

The SART should be switched ON and suspended at highest point of the survival craft; by its top loop using the lanyard provided.

Note: Operating the AIS SART inside a closed Survival Craft or under a canopy may reduce its performance.



Self test of the AIS SART



Self test button

Press and hold for 2 seconds to start the self-test routine.

RED LED indicates self test in progress.

It is recommend to self-test the AIS SART annually; more frequent self testing can put unnecessary drain on the battery. When self testing, a specially coded AIS test transmission is sent that will be visible to all AIS users in the locality. As a successful self-test result is dependant on GPS position acquisition; testing **must** be carried out in the open and under an unobstructed sky.

Self test procedure

Remove the AIS SART from its stowage case and assemble the top section onto the mounting pole. It is not necessary to fully extend the mounting pole. Take the AIS SART outside and **hold it aloft** under a clear view of the sky; this will then maximise the speed of the GPS position fix. Proceed as follows:-

1. Push and hold the TEST button down until the red LED lights.
2. The red LED will flash quickly indicating that the self test routine is in progress.
3. The maximum self-test duration is five minutes (typically 1min)
4. A successful self test will result in the red LED signalling 3 long flashes.
5. Once the self test has completed the AIS SART will switch off automatically.

A self-test failure will result in no pass indication from the red LED. In this unlikely event, it is recommended to repeat the self-test procedure and attempt to further improve the sky view.

Important

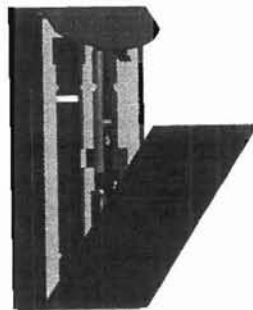
Unnecessary self testing of the AIS SART can reduce the overall run time available in an emergency. Each self test draws a small amount of energy from the battery.

If the AIS SART has been activated for a cumulative period in excess of 6 hours (self-test and operation), then the battery must be replaced to ensure that in an emergency it will still operate for a minimum of 96 hours at -20 °C as required by International Regulations.

An AIS SART that fails self-test should be immediately removed from service; refer to the maintenance section for further information.

Refitting into the bulkhead bracket

Fit the AIS SART and accessories inside the stowage case

**Bracket**

Align stowage bag over bracket hooks and drop into place



Bulkhead bracket installation

The AIS SART should be mounted in its portable stowage case and located where it will not get in the way of day-to-day operations. Chose a protected location away from the extreme effects of the weather and protected from powerful vessel wash down hoses. Where possible, position the AIS SART adjacent to the ship's bridge wing exits ready for easy access in an emergency.

The AIS-SART portable stowage case fits over the permanently installed bulkhead bracket.

Clearance distance

Bracket / Bag exploded fitting diagram

Bulkhead bracket installation

When selecting a suitable mounting position consider:

- Ease of access in an emergency
- Position at least 1 metre from compass equipment
- Environmental protection
- Allow clearance above so that the AIS SART can be easily removed from the bulkhead bracket.

Mounting procedure

Fix the mounting bracket to the ships bulkhead using marine grade stainless steel screws or bolts; length is dependent upon application. Bolts should be secured with either stainless steel locking nuts or stainless steel nuts with stainless steel shake proof washers.

The bulkhead bracket is designed to mount on a flat surface using three fixing points. Three stainless steel screws 25mm in length are included. Check that the rear side of the mounting surface is clear and that the fixing screws will not penetrate something they should not. Offer the bracket into the chosen position and mark through the mounting slots using the bracket as a template.

Drop the AIS SART stowage bag over the bracket; push the bag firmly into place.

Stowage options

The Stowage bag provides additional protection for the AIS SART if you intend to keep it in a carry off 'safety ditch bag' or when transporting it from place to place.

Dealing with a transmitting AIS SART

In the unlikely event that the AIS SART develops a fault and will not turn off you can prevent its transmissions by removing the lower battery section. To do this, undo the three fixing screws located around the of the body. Release the battery pack and unplug the flying battery connector(s). Note; with the battery pack removed the AIS SART (and battery pack) are not waterproof and must not be allowed to get wet.

Refer to product safety warnings.

Routine maintenance

Self test the AIS SART monthly, check that the battery is in date and examine the outer case and bracket for any signs of damage. If required, clean the outer case with fresh water, wipe dry and examine the AIS SART and bracket for any damage.



CAUTION: Never use chemical solvents to clean the AIS SART or bracket.

After activation

The anti tamper switch cover should be replaced by a service agent.



CAUTION: The battery may be run down and need replacement (see below).

Inadvertent operation

The anti tamper switch cover should be replaced by a service agent and the remaining battery life checked (see below).

Battery replacement

The battery should be changed after five years in service.

The exact battery expiry date is marked on the label of the battery pack.

The battery must be replaced when:

- The expiry date has been reached **or**
- The AIS SART has been activated for more than 6 hours of use.

Servicing

It is recommended that battery change should be performed by an authorised McMurdo service agent in order that a complete assessment and integrity check can be performed. Keep the original packing material for reuse whenever the AIS SART is sent for battery replacement or service.

Spare parts

Item	Part number	Contents
Battery kit	91-158-xxx	Battery pack and sealing kit
Anti tamper tab	92-202-xxx	Switch cover
Storage case	92-206-001-xxx	Empty case with packing insert.
Wall mounting kit	92-104-xxx	Bracket and fixings
Lanyard	92-102-xxx	Coiled 10m lanyard
Pole assembly	92-101-xxx	Pole with fitting parts
Bridge card	92-xxx-xxx	Quick instruction card
User Manual	92-260-xxx	This document

Transportation

Passenger Aircraft;

This product contains small lithium metal batteries. The S5 AIS SART can normally be taken on board a passenger aircraft as a personal item in carry-on hand baggage. McMurdo always recommends declaring the AIS SART to airline staff at check in, in the same way you would for a laptop PC or video camera.

As air cargo;

This product contains small lithium metal batteries. Due to the overall low level of lithium content the S5 AIS SART is classed as not restricted as air cargo under IATA SP 188 – PI 970, always check with the carrier concerned for any additional restrictions that could apply.

Specifications

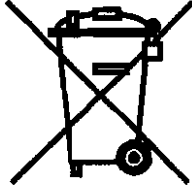
Part Number: 92-001-001A S5 AIS SART retail pack

Type	IMO AIS SART	Non float free
	Manual activation switch	Protected by anti tamper cover.
Operation	Self test	Checks transmitter, battery, GPS and indicators.
		AIS1, 161.975 MHz
AIS Transmitter	Operating frequency	AIS2, 162.025 MHz
	Power output	1 W EIRP
	AIS message type	1, 14
	Modulation	GMSK
	Antenna	Integrated vertical element
Battery	Type	Lithium metal
	Operating life	96 hours minimum
	Storage	6 years
	Service	Replaceable
GNSS	GPS	20 channel
Environment	Operating temperature	-20 °C to +55 °C
	Storage temperature	-30 °C to +70 °C
	Waterproof	Immersion to 10m
	Buoyancy	Floats
	Exterior Finish	Highly visible orange
	Compass safe distance	0.5m
Physical	Weight (main unit)	160 grams
	Weight, (including pole)	450 grams
	Size (main unit)	H330 x W85 (mm)
	Overall length including pole	155 cm
	Lanyard	10 m, 50Kg breaking strain
Mounting	Stowage case (packed)	940g H390 x D80 x W150 (mm)
	Bulkhead bracket	230g
Standards applied	AIS SART	IEC 61097 -14, IEC 60945
	Radio	ITU – R M.1371
	GNSS / GPS	IEC 61108-1
	IMO	MSC.246(83)

End of Life Statement

At the end of the products useful life, it is vital that the battery is removed from the main body of the AIS SART to prevent false alerts. False alerts cause expensive disruption to Search and Rescue services and may endanger lives as a consequence.

Safe disposal



Contains traces of lithium, may contain traces of lead and brominated flame retardants (BFRs), both in the housing material and circuit boards.

DO NOT INCINERATE



McMurdo Ltd strongly recommends that this product is disposed of in a sensible and considerate manner. For example, do not simply discard the product in the domestic waste. Instead take it to a civil recycling facility, or contact McMurdo for further advice.

Warranty Statement

mcmurdo

Subject to the provisions set out below McMurdo Ltd warrants that this product will be free of defects in materials and workmanship for a period of five years from the date of purchase. McMurdo will not be liable to the buyer under the above warranty:-or any defect arising from fair wear and tear, wilful damage, negligence, abnormal working conditions, failure to follow McMurdo's instructions (whether oral or in writing) including a failure to install properly and/or to use batteries recommended and/or supplied by McMurdo, misuse or alterations or repair of the product by persons other than McMurdo or an Approved Service Agent for parts, materials or equipment not manufactured by McMurdo in respect of which the buyer shall only be entitled to the benefit of any warranty or guarantee given by the manufacturer to McMurdo for the battery storage life which is specifically excluded from this warranty if the total price for the product has not been paid.

THE LIMITED WARRANTY STATED ABOVE IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. McMurdo will not be liable for indirect, special, incidental or consequential damages of any kind sustained from any cause. In no event shall McMurdo be liable for any breach of warranty or other claim in an amount exceeding the purchase price of the AIS SART. This warranty does not affect any statutory rights of the consumer.

In order to be valid, claims must be made under the above warranty in writing as soon as practicable after discovery of the defect or failure and within the warranty period referred to above. Proof of purchase will be required. The claim should be sent together with the product in question to the address set out below or to an Approved Service Agent. Following a valid warranty claim McMurdo shall be entitled to repair or replace the product (or part) in question free of charge, or at McMurdo's sole discretion to refund to the buyer the price of the product (or a proportional part of the price). McMurdo shall not be liable to a buyer who is not a consumer for any other loss or damage (whether indirect, special or consequential loss of profit or otherwise) costs, expenses or other claims for compensation which arise out of or in connection with this product. In the case of a consumer McMurdo shall only be liable where other loss or damage is foreseeable.

Nothing shall limit McMurdo's liability for death or personal injury caused by its negligence. This warranty is to be interpreted under English law. All enquiries relating to this warranty or Approved Service Agents should be sent to:

McMurdo Limited, Silver Point, Airport Service Road, Portsmouth, Hampshire, PO3 5PB UK

Telephone: Int + 44 (0) 23 9262 3900 Fax: Int + 44 (0) 23 9262 3998

Web: www.mcmurdo.co.uk Email: customerservice@mcmurdo.co.uk

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